

## Planning for Trauma Care in Rhode Island

Harvey E. Zimmerman, MA, Jay S. Buechner, PhD,  
and Peter Leary, RN, MA

The trauma care system in Rhode Island is organized around two principal components: pre-hospital care and emergency transport provided by emergency medical services (EMS) and hospital care provided by the emergency departments (ED's) and inpatient services of acute-care general hospitals. Although there are organized planning structures associated with some parts of the system (e.g., pre-hospital care protocols and standing orders), Rhode Island has no overall plan for trauma care.

In the fall of 2001 the Rhode Island Department of Health received supplemental federal funding under the Emergency Medical Services for Children grant to support activities in preparation for trauma system planning in the state. These activities included (1) completion of the National Trauma-EMS Systems Survey for Rhode Island, (2) preparation of the document "Rhode Island Statistics on Trauma Care," and (3) establishment of a Stakeholders Group which met in January 2002 to identify strengths, weaknesses, opportunities, and threats in the current system. This article presents selected items from the project's statistical report.

**Methods.** EMS providers are licensed by the Department of Health's Office of Emergency Medical Services and are required by regulation to complete a summary "run sheet" for every EMS vehicle run performed. Copies of these forms are provided to the hospital where the patient is transported and to the EMS Office. Selected data items, including patient demographics and medical conditions, dates and times of transport, and medical care provided are recorded in a format that is scanned electronically and entered into the EMS run data file. In particular, EMS runs for cases of trauma are identified by one of the scanned data items.

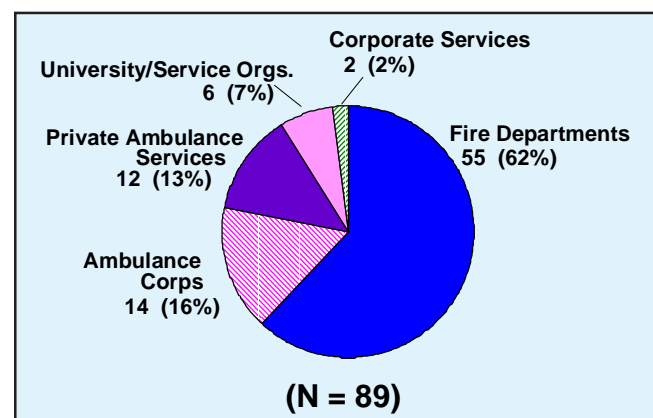
All acute-care general hospitals in Rhode Island submit patient-level data for every hospital inpatient stay, as required by licensure regulations. Up to eleven diagnoses made during the hospital admission are included as codes from the International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification (ICD-9-CM).<sup>1</sup> For this analysis, trauma discharges were defined as any patient discharged with a principal or additional diagnosis of injury. The severity of each patient's injuries were approximated by the Injury Severity

Score (ISS) derived from injury diagnosis codes.<sup>2</sup> Trauma discharges were categorized as severe if their ISS was 16 or higher.

There is no equivalent reporting system in place for hospital emergency departments, so information on trauma care provided in those settings is not included in this analysis.

**Results.** Pre-hospital care is provided by 89 licensed emergency medical services in Rhode Island. The licensed entities are mostly public service entities, such as fire departments or ambulance corps, but also include several other non-profit organizations such as universities, a number of private for-profit ambulance services, and a few large corporations. (Figure 1) Of the 89 services, 51 (57%) are staffed by paid emergency medical technicians (EMT's), 36 (40%) are staffed by volunteers, and 2 (2%) use both paid and volunteer staff.

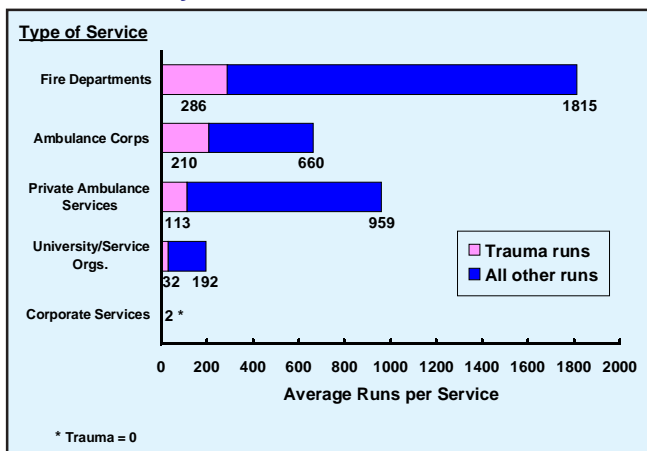
These services reported a total of 121,712 runs in 2000, of which 20,185 (16.6%) were for trauma victims. During that year, the average number of runs, both for total runs and for trauma runs, was greatest for fire department EMS services and least for corporate services. (Figure 2) The large majority (94%) of runs arrived at the scene to which they were called



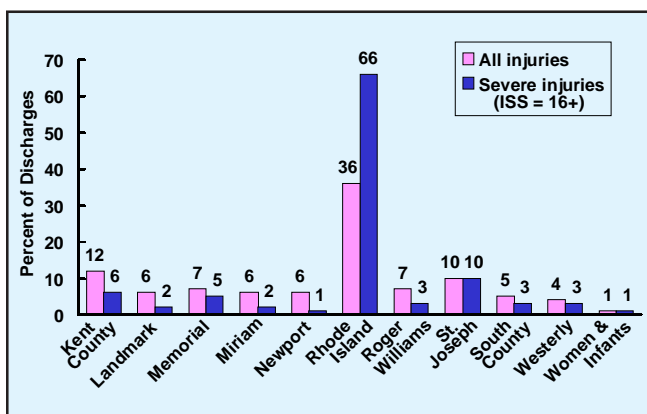
**Figure 1.** Emergency medical services by type of entity, Rhode Island, 2001.

within 10 minutes of dispatch, and nearly as many (91%) reached their destinations, usually hospitals, within 20 minutes of dispatch.

During 2000, there were 8,527 inpatient discharges with trauma diagnoses in Rhode Island's eleven acute-care general hospitals, including Women & Infants Hospital. The largest proportion (36%) was treated at Rhode Island Hospital, the state's only Level I Trauma Center. (Figure 3) Of the cases



**Figure 2.** Average number of runs per emergency medical service, by type of entity and trauma status, Rhode Island, 2000.



**Figure 3.** Inpatient discharges with injuries, by hospital and injury severity, Rhode Island, 2000.

for which injury severity scores could be assigned, 11% had an ISS of 16 or higher, indicating severe injury. Of these, an even greater proportion (66%) was concentrated at Rhode Island Hospital. (Figure 3).

**Discussion.** The work performed to date in preparation for developing a trauma system plan for Rhode Island has

produced descriptive information about the number and types of providers of pre-hospital and hospital care and about the volume of care they provide. Information of this kind needs to be evaluated relative to the needs of the state's population and existing standards for trauma care systems as part of the next stage in developing a plan.

To move to this next stage, the Department of Health has taken the lead in applying for an additional federal grant to support planning activities. The proposed grant activities include (1) designation of a lead agency for the project, including naming a Trauma Systems Manager and Trauma Systems Medical Director, (2) continuation and expansion of the Stakeholders Group, along with a newly created Executive Committee, (3) development of a Rhode Island Trauma Care Systems Plan, and (4) addressing deficiencies in the current system that are identified in the planning process, insofar as resources allow. The intended result is of these activities is an improved trauma care system that will result in reduced death and disability from injuries and better health for the people of Rhode Island.

*Harvey Zimmerman, MA, is a health economist at Spectrum Research Services, Inc., and consultant to the Division of Health Services Regulation.*

*Jay Buechner, PhD, is Chief, Office of Health Statistics, and Assistant Professor of Community Health, Brown Medical School.*

*Peter Leary, RN, MA, is Chief, Office of Emergency Medical Services.*

## References

1. Public Health Service and Health Care Financing Administration. *International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification, 6<sup>th</sup> ed.* Washington: Public Health Service, 1996.
2. MacKenzie EJ, Steinwachs DM, Shankar B. Classifying trauma severity based on hospital discharge diagnoses. Validation of an ICD-9CM to AIS-85 conversion table. *Med Care* 1989;27:412-22.

*Originally published in the July 2002 issue of Medicine & Health / Rhode Island*

Rhode Island Department of Health  
Office of Health Statistics  
3 Capitol Hill  
Providence, RI 02908

*Change service requested  
401 222-2550*

**HEALTH**

PRSRT\_STD  
U.S. Postage  
PAID  
Providence, R.I. 02904  
Permit No. 1286